

Weekly Review 9

- 1) The rate at which a herd is increasing is given by $B(t) = 26.7(1.036)^t$ bison per year where t is the time in years since the beginning of year 2000.
 - a) If the herd contains 756 bison at the beginning of 2000, predict the size of the herd at the beginning of 2015.
 - b) Predict the average annual increase in the bison herd from 2000 to 2015.
- 2) Area:
 - a) Use Simpson's rule along with another approximation method we have studied to approximate the area between the x-axis and the curve $y = 4 - x^2$. Check your answer with the definite integral of the function.
 - b) Find the area bounded by the curves $y = \cos(x)$, $y = x$, and the y-axis.
- 3) What is the average value of the function $y = 3x^2\sqrt{x^3 + 1}$ on the interval $[0, 2]$?
- 4) Find the *total distance* traveled by a particle moving along a straight line with velocity $v = \sin(\pi t)$ for $0 \leq t \leq 2$.
- 5) Find the indicated integrals:

a) $\int \frac{2x}{x^2+1} dx$

b) $\int \frac{6x^2+10}{x^3+5x} dx$

c) $\int_0^2 x^2(x^3 + 1)^{\frac{3}{2}} dx$

d) $\int_0^{\frac{\pi}{6}} \sin(2x) \cos(2x) dx$